REMARKS

Claims 13-17 are pending in the instant application. No new matter has been added as a result of the above-described amendments. The rejections set forth in the Office Action have been overcome by amendment or are traversed by argument below.

1. Rejection of claims 13-15 under 35 U.S.C. § 112, first paragraph

The Office Action maintains a rejection of claims 13-15 under 35 U.S.C. § 112, first paragraph, as containing subject matter that was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventors, at the time the application was filed, had possession of the claimed invention. Applicants' understanding of this rejection is fully set forth in Applicants' response to the Office Action mailed December 1, 2004.

Applicants respectfully disagree with the instant Action's assertion that the specification does not contain an adequate written description of the claimed invention. As Applicants noted in their response to the Action mailed August 25, 2005, the *Guidelines for Examination of Patent Applications Under the 35 U.S.C. 112, P1, "Written Description" Requirement* ("*Guidelines*") state that an adequate written description of the claimed invention may be shown by any description of sufficient, relevant, identifying characteristics so long as a person skilled in the art would recognize that the inventor had possession of the claimed invention. *Guidelines,* 66 Fed. Reg. 1099, 1105 (2001). With regard to a claim directed to a genus, the *Guidelines* specifically state that the written description requirement may be satisfied through sufficient description of a representative number of species by actual reduction to practice, or reduction to drawings, or by disclosure of relevant, identifying characteristics (*i.e.*, structure or other physical or chemical properties, or by functional characteristics coupled with a known or disclosed correlation between function and structure, or by a combination of such identifying characteristics) sufficient to show the applicant was in possession of the claimed genus. *Guidelines,* 66 Fed. Reg. 1099, 1106 (2001).

Both the instant Action and the Action mailed August 25, 2005 state that claims 13-15 do not limit the functional attributes of the encompassed molecules, and that one of ordinary skill in the art would reasonably conclude that claims 13-15 are not limited to compositions that bind AGP-3 or APRIL. According to the *Guidelines*, however, claims 13-15 need not contain an explicit functional limitation in order to satisfy the written description requirement. Rather, the *Guidelines* state that the

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written description requirement may be satisfied by a disclosure of relevant, identifying characteristics of the molecules encompassed by a claimed genus (*e.g.*, functional characteristics coupled with a known or disclosed correlation between function and structure).

As Applicants noted in their response to the Action mailed August 25, 2005, the instant specification ***explicitly discloses*** that (a) TACI and BCMA are cell-surface receptors for APRIL (page 60, lines 14-19); (b) APRIL competes with AGP-3 for TACI and BMCA binding (page 60, lines 15-18); (c) soluble BCMA competes with APRIL and AGP-3 for receptor binding, ameliorating T cell-dependent and T cell-independent humoral immune responses *in vivo* (page 5, lines 7-10; page 60, lines 25-27); and (d) soluble TACI competes with APRIL and AGP-3 for receptor binding, ameliorating T cell-dependent and T cell-independent humoral immune responses *in vivo* (page 5, lines 10-12; page 60, lines 24-27). The specification also ***explicitly discloses*** molecules such as those recited in claims 13-16, comprising at least one specific binding partner, wherein a "specific binding partner" is a molecule that preferentially binds to a protein of interest (*e.g.*, TACI and BCMA), including molecules such as solublized receptors (*e.g.*, soluble TACI and soluble BCMA) (page 13, lines 14-19; page 32, line 22 to page 33, line 18). The specification also ***explicitly discloses*** that soluble receptor fragments such as the consensus region of TACI (SEQ ID NO: 16), the consensus region of BCMA (SEQ ID NO: 7), and the TACI/BCMA extracellular consensus sequence (SEQ ID NO: 13) constitute specific binding partners (page 33, line 24 to page 34, line 3). Further, the specification ***explicitly discloses*** that such soluble receptors can be linked to an Fc domain, like the peptides mentioned in the specification (page 34, lines 5-7). Thus, the specification's teachings clearly show that disease states associated with APRIL and AGP-3 activity can be modulated using TACI, BCMA, APRIL, or AGP-3, or portions thereof, either individually or in combination (page 5, lines 19-27). Applicants contend, therefore, that because the specification ***explicitly discloses*** relevant, identifying characteristics of the molecules encompassed by the claimed genus (*i.e.*, functional characteristics coupled with a known or disclosed correlation between function and structure), and because the claims are limited to molecules comprising at least one of three specific binding partners that are ***explicitly disclosed*** in the specification (*i.e.*, the consensus region of TACI, the consensus region of BCMA, and the TACI/BCMA extracellular consensus sequence), the specification contains an adequate written description of the claimed invention.

In response to the above arguments, the instant Action states that "[w]hile the above

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disclosure was necessary for enablement of the claims, it is not relevant to limiting the functional attributes of the products encompassed by the claims because the claims cannot be read in light of the specification." Applicants again contend, however, that the *Guidelines* do not require that claims 13-15 contain an explicit functional limitation in order to satisfy the written description requirement. Therefore, rather than "limiting the functional attributes of the products encompassed by the claims," Applicants note that the specification contains explicit teachings regarding the functional characteristics and structure/function relationships of the P groups recited in claim 13, and thus discloses relevant, identifying characteristics of the molecules encompassed by the claimed genus. The specification's explicit teachings of functional characteristics coupled with a known or disclosed correlation between function and structure are, therefore, indeed relevant to a written description requirement analysis. Moreover, Applicants respectfully disagree with the Action's assertion that "the claims cannot be read in light of the specification." In fact, the contrary is true. *See, e.g., Wenger Mfg., Inc. v. Coating Mach. Sys., Inc.*, 239 F.3d 1225, 1237 (Fed. Cir. 2001) (stating that "claims ***must*** be read in light of the specification of which they are a part") (emphasis added); *Elekta Instrument S.A. v. O.U.R. Sci. Int'l, Inc.*, 214 F.3d 1302, 1307 (stating that "one may look to the written description to define a term already in a claim limitation, for a claim ***must*** be read in light of the specification of which it is a part") (emphasis added). Applicants, therefore, contend that claims 13-15 satisfy the written description requirement, and respectfully request that the rejection under 35 U.S.C. § 112, first paragraph, be withdrawn.

2. Rejections of claims 13-15 under 35 U.S.C. § 103(a)

The Office Action maintains a rejection of claims 13-15 under 35 U.S.C. § 103(a), as being unpatentable over International Publication No. WO 98/39361 (the '361 publication) in view of International Publication No. WO 99/11791 (the '791 publication). The Office Action also maintains a rejection of claims 13-15 under 35 U.S.C. § 103(a), as being unpatentable over U.S. Patent No. 6,475,987 (the '987 patent) in view of the '791 publication. Applicants' understanding of these rejections are fully set forth in Applicants' response to the Office Action mailed December 1, 2004.

Applicants note that an analysis of obviousness must be based on the following factual inquiries: (1) the scope and content of the prior art; (2) the differences between the prior art and the claims at issue; (3) the level of ordinary skill in the art at the time the invention was made; and (4)

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objective evidence of nonobviosuness, if any. *Graham v. John Deere Co.*, 383 U.S. 1, 17-18 (1966). Moreover, where claimed subject matter has been rejected as obvious in view of a combination of prior art references, a proper analysis under § 103 also ***requires*** consideration of two factors: (1) whether the prior art would have ***suggested*** to those of ordinary skill in the art that they should make the claimed composition or device, or carry out the claimed process; and (2) whether the prior art would also have revealed that in so making or carrying out, those of ordinary skill would have a reasonable expectation of success. *In re Vaeck*, 947 F.2d 488, 493 (Fed. Cir. 1991). As the Federal Circuit has emphasized: "***[b]oth*** the ***suggestion*** and the reasonable expectation of success must be founded in the prior art, not the Applicants' disclosure." *Id.* (emphasis added).

Applicants respectfully disagree with the Action's assertion that either the '361 and '791 publications in combination or the '987 patent and the '791 publication in combination renders the claimed invention obvious. In particular, because none of the references cited against the instant application discloses that the cysteine-rich pseudo-repeats constitute the ligand binding domain, Applicants contend that none of these references provides the ***required suggestion*** to make the claimed composition. In fact, the '791 publication (which forms the basis of both combinations asserted against the instant application) actually teaches away from the claimed composition. Specifically, when the '791 publication refers to the "ligand binding domain" or "soluble active fragment," it refers ***not*** to the cysteine-rich pseudo-repeats, but rather, to the ***entire*** extracellular domain (*see* page 1, lines 22-23; page 9, lines 15-17; page 29, lines 22-23; page 69, line 30; page 78, line 18; and page 121, line 24). For example, the '791 publication states that:

> In one embodiment, the invention provides a soluble active fragment of an AP04 polypeptide. Such ***a soluble active fragment includes the ligand binding domain*** of an AP04 polypeptide ***and can be***, for example, ***a truncated polypeptide encoding the extracellular domain*** of an AP04 polypeptide.

(page 25, lines 6-11) (emphasis added). The '791 publication also states that:

> In one embodiment, the invention provides ***a soluble AP06 active fragment that includes an AP06 ligand binding domain***. A soluble AP06 active fragment ***can be***, for example, ***a truncated polypeptide encoding the extracellular domain*** of an AP06 polypeptide.

(page 29, lines 7-11) (emphasis added). The '791 publication, therefore, never states that the cysteine-rich pseudo-repeats ***alone*** constitute the "ligand binding domain" or an embodiment of the "soluble active fragment" of the invention.

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Even more telling, however, is the fact that while none of the '791 publication's 43 claims recite a ligand binding active fragment comprising only the cysteine-rich pseudo-repeats of the extracellular domain (despite the fact that there is no surcharge for inclusion of additional claims in International applications), claim 9 recites an "active fragment [that] is an AP04 ***extracellular*** ligand binding domain" (page 125) (emphasis added). Clearly, if the applicant of the '791 publication believed that the cysteine-rich pseudo-repeats constitute the ligand binding domain, the applicant would have claimed an active fragment comprising the portion of the extracellular domain of AP04 that contains only the cysteine-rich pseudo-repeat domains. Instead, the applicant of the '791 publication claimed the entire extracellular ligand binding domain. By disclosing that the ligand binding domain constitutes the entire extracellular domain, and claiming only the entire extracellular domain, the '791 publication does ***not*** teach the use of only the cysteine-rich pseudo-repeats. Because neither the '361 and '791 publications nor the '987 patent teach the use of only the cysteine-rich pseudo-repeats, none of the references provides the ***required suggestion*** to make the claimed composition.

In response to the above arguments, the instant Action states that:

> Applicant again argues that the disclosure of Chaudhary regarding the involvement of the cysteine-rich pseudo repeats with ligand binding to a TNF receptor do not provide motivation to combine the references because "involvement" cannot be interpreted as necessary and sufficient for ligand binding. This has again been considered and found not to be persuasive. One of skill in the art need only have a reasonable expectation of success to be motivated to combine the references on the basis of the teachings of Chaudhary et al[.] . . . The examiner maintains that because the Cysteine rich repeats were identified as being involved in ligand binding, one of skill in the art would have a reasonable expectation that portions of TACI comprising the extracellular cysteine-rich repeats would retain the ability to bind to the TNF receptor.

Applicants contend, however, that because the '791 publication discloses and claims the use of the entire extracellular domain, none of the references cited against the instant application provides the ***required suggestion*** to use only the cysteine-rich pseudo-repeats. The alleged reasonable expectation of success in using the cysteine-rich pseudo-repeats simply is not enough to sustain a rejection under Section 103, since "***[b]oth*** the ***suggestion*** and the reasonable expectation of success must be founded in the prior art, not the Applicants' disclosure." *In re Vaeck*, 947 F.2d 488, 493 (Fed. Cir. 1991). In other words, absent Applicants' teaching, one of ordinary skill in the art would

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use the entire extracellular domain – as disclosed and claimed in the '791 publication, and not the cysteine-rich pseudo-repeats, as disclosed and claimed (*i.e.*, "suggested") in the instant application.

Moreover, Applicants contend that the instant Action's focus on a single statement in the '791 publication (*i.e.*, the "cysteine-rich pseudo-repeats in the extracellular domain . . . are involved in ligand binding") contravenes the requirements of M.P.E.P. § 2141.02, which states that "[a] prior art reference must be considered in its entirety, i.e., as a whole, including portions that would lead away from the claimed invention." In particular, by asserting that the '791 publication teaches that the cysteine-rich pseudo-repeats are equivalent to the ligand binding domain (teachings that the '791 publication quite simply lacks), the instant Action ignores all of the teachings in the '791 publication (as detailed above) that explicitly equate the ***entire*** extracellular domain with the ligand binding domain, and thus, lead away from the claimed composition. Because the '791 publication, when considered in its entirety as required under M.P.E.P. § 2141.02, clearly equates the ***entire*** extracellular domain with ligand binding, the '791 publication does not provide the ***required suggestion*** to use only the cysteine-rich pseudo-repeats. As a result, one of ordinary skill in the art would not have been motivated, ***without*** first considering Applicants' disclosure, to substitute a polypeptide comprising residues 33-104 for the complete extracellular domain in the fusion proteins disclosed in the '361 publication or to substitute a polypeptide comprising the cysteine-rich repeat of the BCMA extracellular domain in the fusion protein comprising the immunoglobulin Fc domain disclosed in the '987 patent. Applicants respectfully contend that rejections based on 35 U.S.C. § 103(a) have been traversed by argument, and request that the Examiner withdraw all rejections made on this basis.

CONCLUSIONS

Applicants respectfully contend that all conditions of patentability are met in the pending claims as amended. Allowance of the claims is thereby respectfully solicited.

If Examiner Canella believes it to be helpful, she is invited to contact the undersigned representative by telephone at 312-913-0001.

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Respectfully submitted,
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Dated: October 18, 2006

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